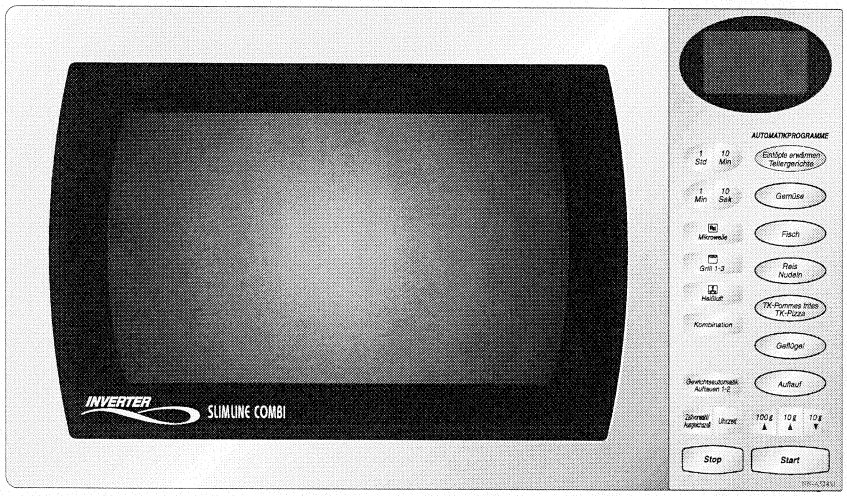
Service Manual

Microwave Oven

INVERTER

NN-A524MBGPG



Power source	230 VAC Single Phase 50Hz
Power requirements	Microwave 1300
	Grill 1350W
	Convection 1350W
	Micro / Grill Combi 2420W
	Micro / Conv Combi 2430W
Output (IEC60705)	Microwave 1000W
	Grill1300W
	Convection 1300W
Microwave frequency	2450Mhz
Timer	99 min 99 second
Oven cavity size	27L
Outside dimensions	510mm(W) x 390mm(D) X 305MM (H)
Inside dimensions	359mm(W) X 352mm(D) x 217mm(H)
Weight	13Kg
Specifications subject to change without notice	

Panasonic®

! WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity must be serviced or repaired only by experienced proffesional technicians. Any attempt to service or repair the product or products dealt with this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by (!) in the schematic diagrams, circuit board diagrams, exploded views and replacement parts lists. It is essential that these critical parts are replaced with parts specified by the manufacturer, preventing shock, fire or other hazards. Do not modify the original design without permission from the manufacturer.

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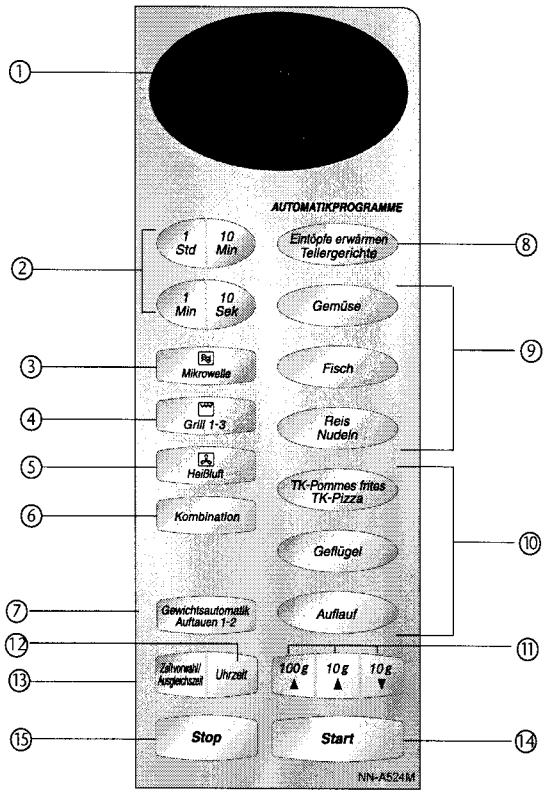
2 Feature Chart

Function	A524MBGPG
Microwave	6
Grill	3
Convection	13
Combi	Yes
Weight reheat	2
Weight cook	4
Weight combination	-
Weight defrost	2
Auto Preheat	4
Delay/Stand	Yes
Kg/lb	No
Stage Cooking	3
Clock	24 h
Word prompt	German

3 Control Panel



① Digitalanzeige/Anzeigenfeld

② Zeiteingabetasten

③ Leistungswahltaste für den Mikrowellenbetrieb

④ Taste für den Betrieb mit Grill

⑤ Taste für den Betrieb mit Heißluft

⑥ Taste für den Kombinationsbetrieb

⑦ Taste für die Gewichtsautomatik zum Auftauen

⑧ Taste für die Gewichtsautomatik zum Erwärmen

⑨ Taste für die Gewichtsautomatik zum Garen

⑩ Tasten für die Gewichtsautomatik zum Kombinationsgaren

⑪ Gewichtseingabetasten (▲ aufwärts bzw. ▼ abwärts)

⑫ Taste für die Uhrzeit

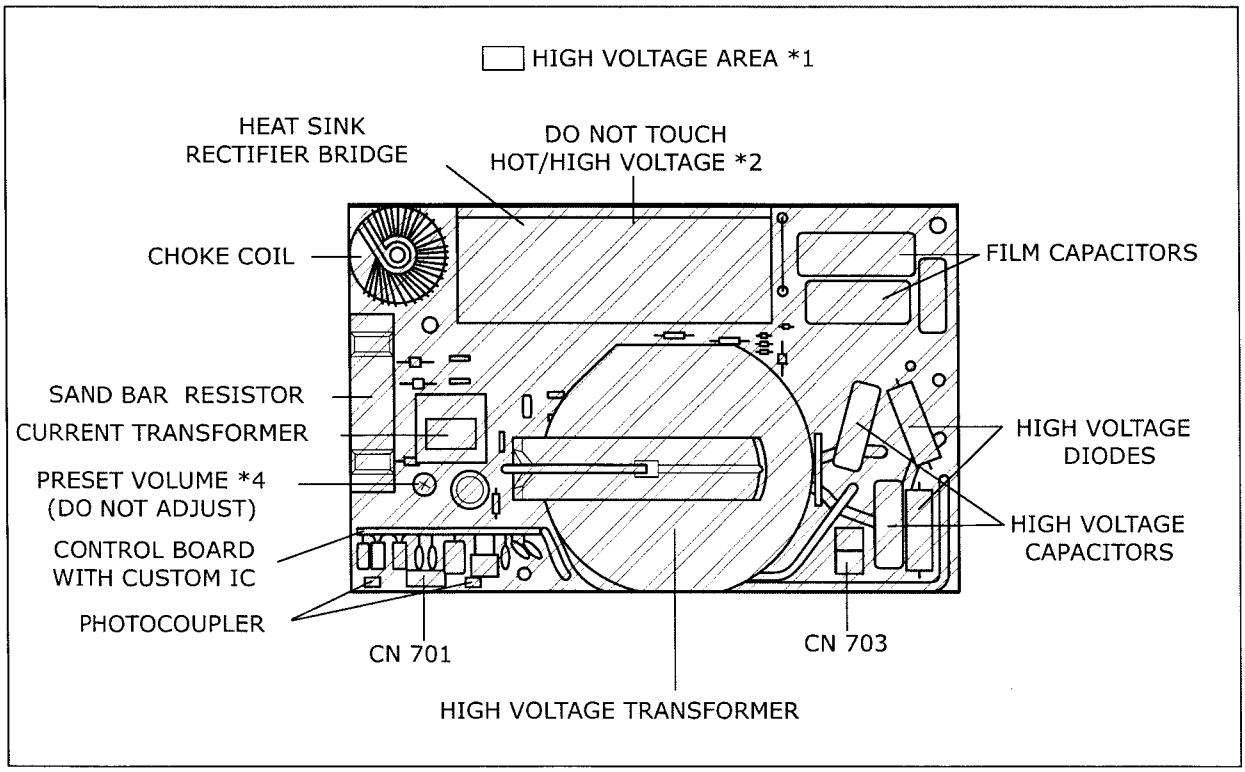
⑬ Taste für Zeitvorwahl, Ausgleichs-bzw. Nachgarzeit

⑭ Starttaste:
Durch Drücken auf die Starttaste beginnt das Mikrowellengerät zu arbeiten. Wird die Tür geöffnet bzw. die Stopp-/Löschtaste während des Betriebs einmal betätigt, muß die Starttaste erneut gedrückt werden, damit das Gerät wieder arbeitet.

⑮ Stopp-/Löschtaste:
Durch einmaliges Drücken der Stopp-/Löschtaste während des Kochvorganges wird der Betrieb des Gerätes unterbrochen. Durch zweimaliges Drücken während des Kochvorganges werden alle Eingaben gelöscht und in der Digitalanzeige erscheint wieder die Tageszeit.

4 Inverter Warnings

The inverter circuit board supplies the magnetron tube with a very high voltage (4000 volts).



Danger

- The inverter circuit board operates at high voltages and high temperatures.

The Inverter PCB

- Operates at a very high voltage and current.
- Has an aluminium heat sink which becomes very hot.
- Has capacitors in the circuitry that hold a high voltage charge even when the oven is not operating.

Warning

- Do not touch the high voltage circuit. When replacing the board care must be taken to avoid possible electric shock.
- Do not touch the aluminium heat sink as it is part of the high voltage circuit and becomes very hot.
- **Do not attempt to repair the inverter PCB, this can be very dangerous. Replace the high voltage inverter circuit as a complete unit.**
- Do not adjust or tamper with the pre-set volume on the inverter board. It is very dangerous to adjust this pre-set without proper test equipment.
- Do not operate the microwave oven when the inverter grounding plate and fixing screw is loose. It is very dangerous to operate the inverter circuit board without a proper ground connection.

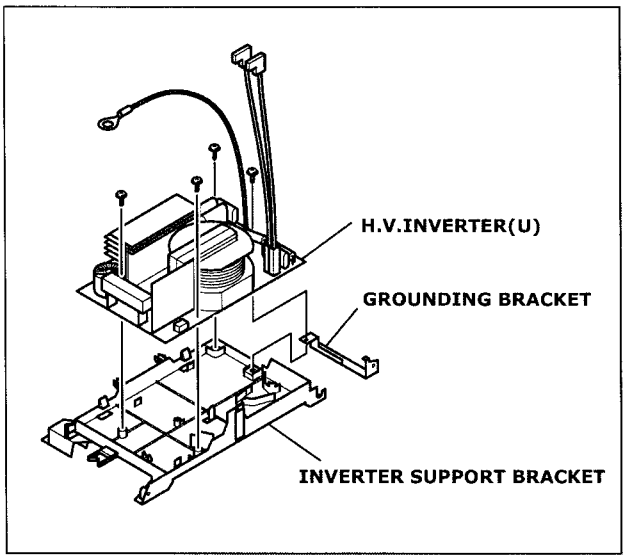
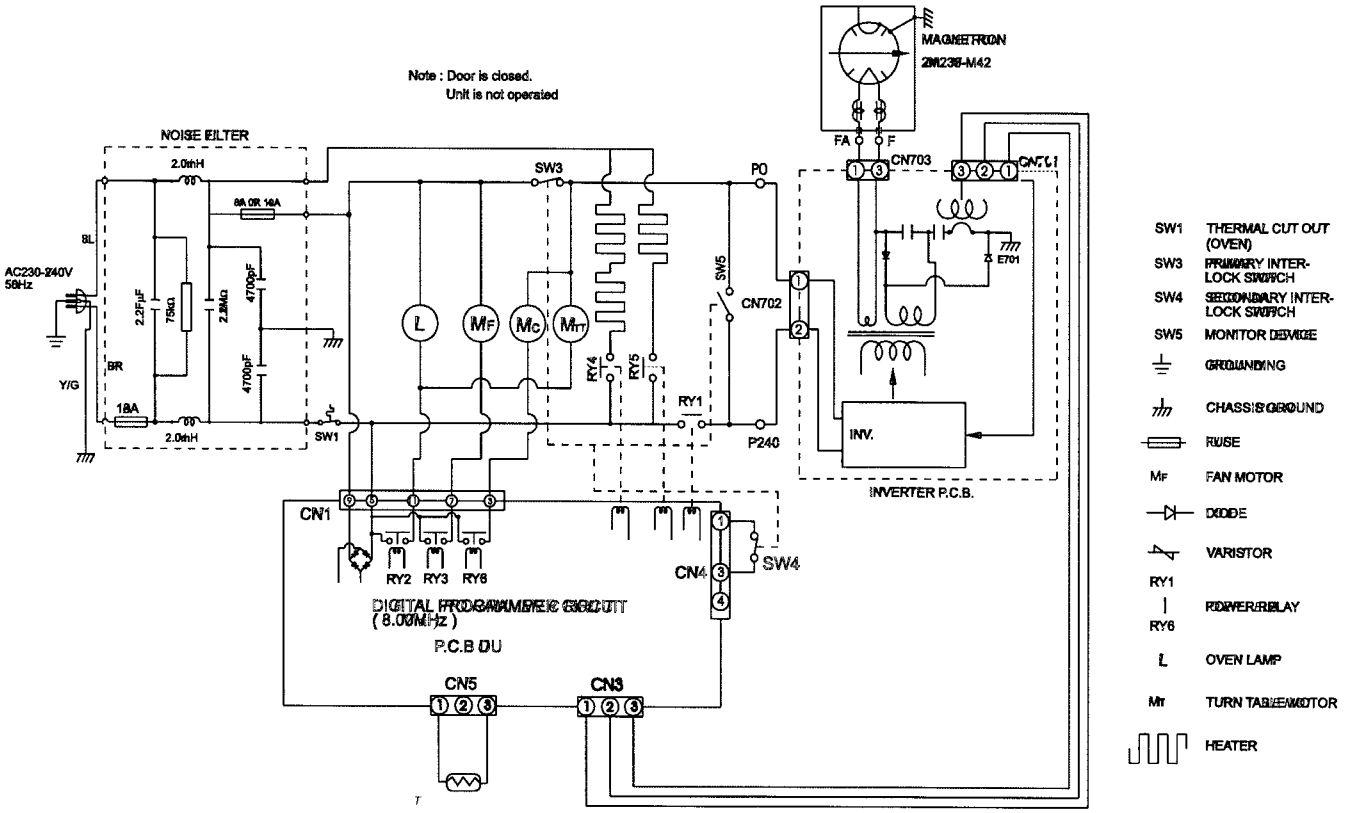
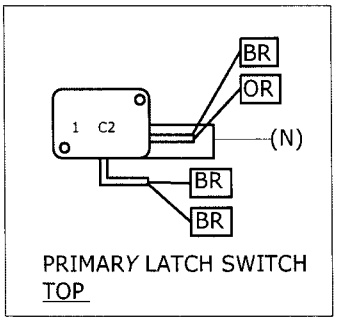


figure 1Assembly of the inverter circuit board

5 Schematic Diagram

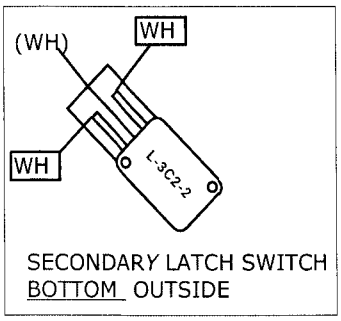


6 Wiring Diagram

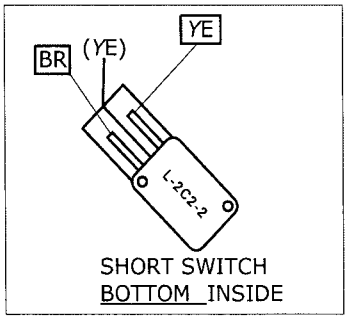


PRIMARY LATCH SWITCH
TOP

NOTE WHEN REPLACIN ANY COMPONENT S RECONNECT THE WIRE HARNESS
ACCORDIN T O THE COLOURS BELOW
COL OURS INDICATED INSIDE BRACKETS () INDICATE THE COLOUR O
THE CONNECTOR HOUSIN



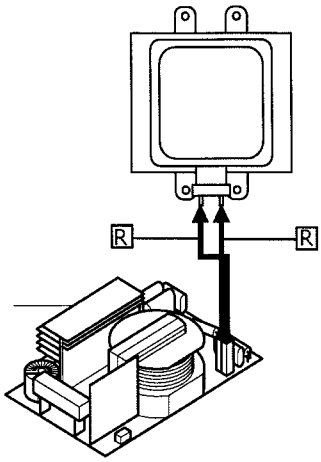
SECONDARY LATCH SWITCH
BOTTOM OUTSIDE



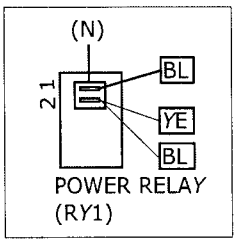
SHORT SWITCH
BOTTOM INSIDE

CAUTION
HEAT SINK
(HOT LI E)
ER Y HI H OL TA E
AND TEMPERATURE

MA NETRON



HI H OL TA E IN ER TER



POWER RELAY
(RY1)

SYMBOL	COLOUR
BL	BLUE
BK	BLACK
BR	BROWN
WH	WHITE
YE	YELLOW
N	NATURAL
R	RED

7 Description of the Operating Sequence

7.1 Variable power cooking control

The output power is controlled by the inverter power supply. The level of output from the inverter circuit is controlled by a pulse width modulated signal from the digital programmer circuit (DPC). The digital programmer circuit operates relay RY1 to supply power to the inverter circuit.

NOTE: If the microwave cooking time is longer than 3 minutes, the cooling fan will operate for 1 minute to cool the oven and its electronic components.

7.2 Auto weight defrost, Auto weight Cook

When an auto control feature is selected and the start pad pressed:

1. The digital programmer circuit determines the power level and the cooking time and indicates the operating state in the display. The table shows the corresponding cooking times and weights for the selected category.
2. When the cooking time in the display window has elapsed, the oven turns off automatically via the control signal from the digital programmer circuit.

Note: After auto cooking if the oven temperature is over the predetermined temperature the fan motor rotates to cool the oven and its components.

Auto weight defrost

Category	1st Touch weight	Cooking time
Fleisch / Fisch	800g	14 Min 50 Sec
Brot / Kuchen	500g	8 Min 20 Sec

Auto Weight Reheat

Category	1st Touch weight	Cooking time
1. Eintopfe erwamen	500g	5 Min 00 Sec
2. tellergerichte	400g	4 Min 30 Sec

Auto Weight Cook

Category	1st Touch weight	Cooking time
1. Gemuse	500g	9 Min 10 Sec
2. Fisch	500g	8 Min 20 Sec
3. Rice	200g	21 Min 00 Sec
2. Nudein	300g	15 Min 00 Sec

Auto Weight Combi

Category	1st Touch weight	Cooking time
1. TK-Pommes Frites	300g	11 Min 10 Sec
2. TK-Pizza	300g	7 Min 45 Sec
3. Geflugel	1200g	21 Min 00 Sec
4. Auflauf, Gratin Dauphinois, Lasagne, Pesto Hähnchen-Auflauf	300g	15 Min 00 Sec

8 Cautions to be Observed when Troubleshooting

The microwave oven is a high voltage, high current device. Although it is free from danger in ordinary use, extreme care should be taken during repair.

Caution: Servicemen should remove their watches whenever working close to or replacing the magnetron.

8.1 Check the grounding

Do not operate the microwave oven on a two wire extension cord. The microwave oven is designed to be used only when grounded. It is imperative that the appliance is properly grounded before beginning repair work.

8.2 Inverter Warnings

DANGER, HIGH VOLTAGE AND HIGH TEMPERATURES ON THE INVERTER POWER SUPPLY

This high voltage inverter power supply supplies very high voltage and current to the magnetron. Though it is free from danger in ordinary use, extreme care should be taken during repair. This circuit looks like a TV flyback transformer, however, the currents and voltages in this circuit are very high, this means this circuit is extremely dangerous.

The aluminium heat sink is also energized with high voltage, never touch this heat sink when the microwave oven is plugged into the mains outlet. The collector of the power device (IGBT) is directly connected to the aluminium heat sink.

The aluminium heat sink becomes very hot when the inverter circuit operates. Never touch this heat sink during operation and allow time for it to cool down before servicing the microwave oven.

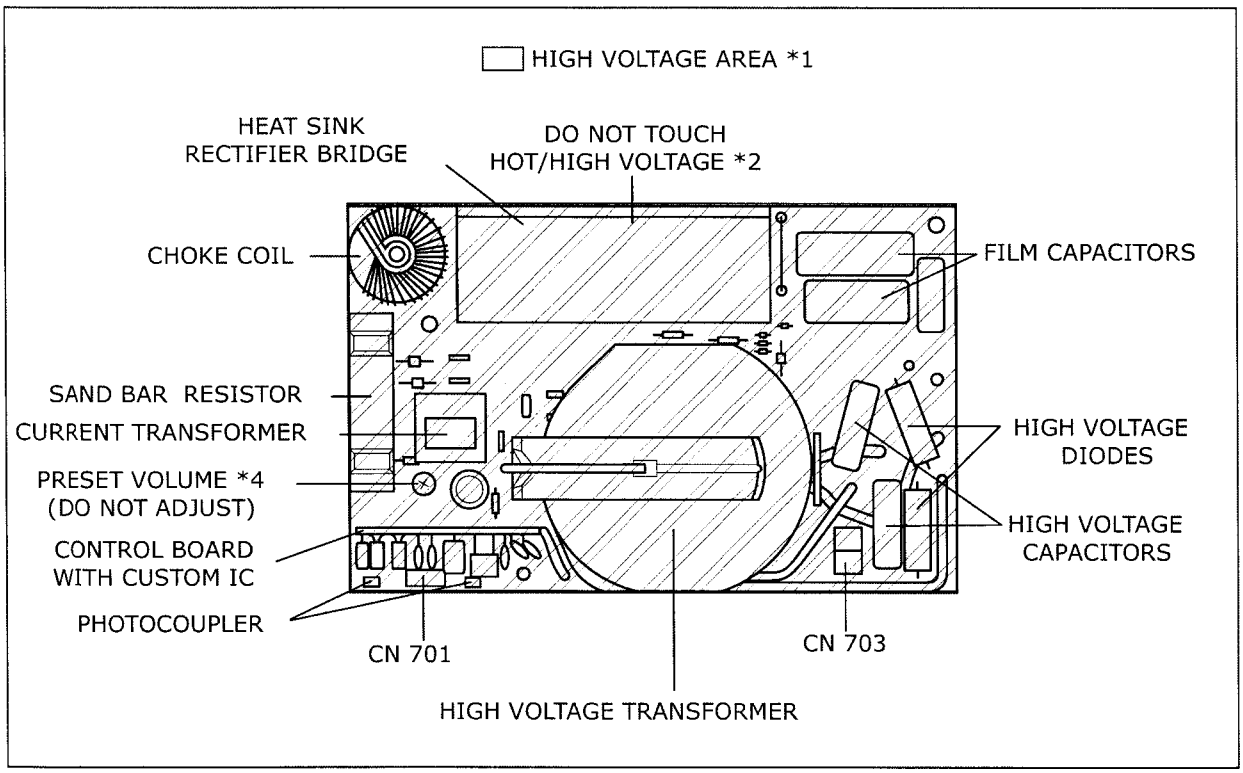


figure 3HV Inverter warning

WARNING
INVERTER POWER SUPPLY GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter circuit board must be connected to the microwave oven chassis. If the inverter board is not grounded it exposes very high voltages and causes extreme DANGER! Ensure that the inverter circuit is properly grounded via the inverter earth bracket.

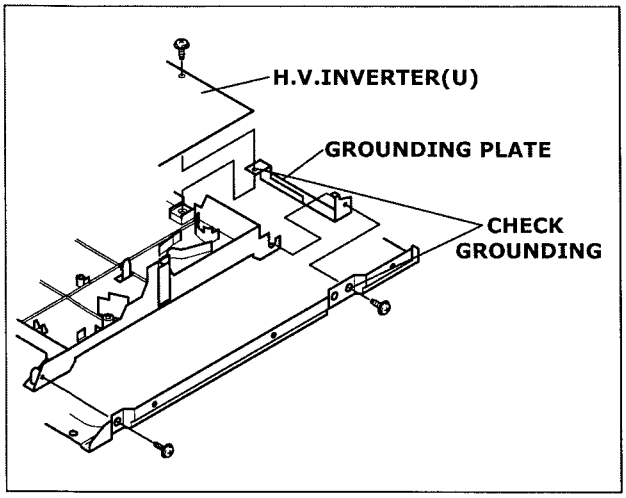


figure 4Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLTAGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors on the inverter circuit board.

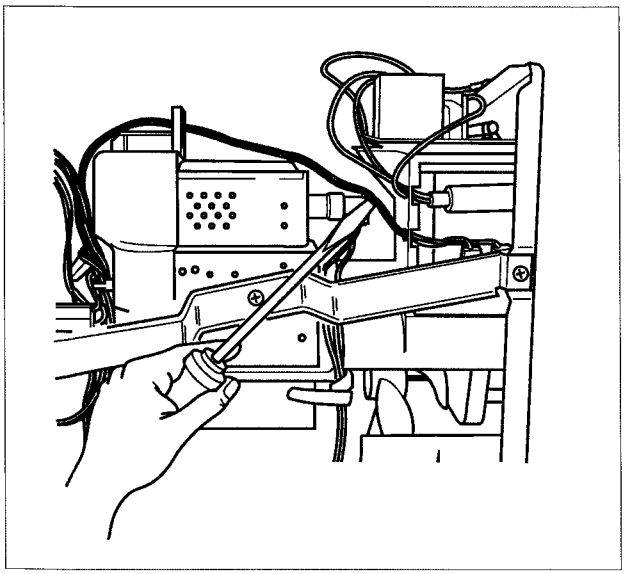


figure 5Discharging the high voltage capacitors

1. Before replacing or testing parts discharge these high voltage capacitors by shorting the inverter ouput terminal to the microwave oven chassis
2. Remove the power plug from the mains outlet
3. Ensure that the high voltage lead is connected to the inverter output terminals and the magnetron input terminals.
4. Short the magnetron input terminal to the microwave oven chassis using an insulated handle screwdriver.
5. Always touch the microwave oven chassis and then the magnetron terminal.

WARNING
There is high voltage with high current capabilities in the primary, secondary windings, choke coil and heat sink on the inverter circuit. When power is connected to the microwave oven, it is extremely dangerous to work on or near these inverter circuit components. **DO NOT** measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

WARNING
Never touch any circuit wiring during operation.

8.3 Part replacement

When replacing any component in the microwave oven, always ensure that the power cord is removed from the wall outlet.

8.4 When the 10A fuse is blown due to the operation of the short switch

WARNING
Always replace both the short switch and the primary latch switch when the 10A 250V fuse is blown due to the operation of the short switch. It is also important to change the power relay 1 (RY1) when the continuity test shows shorted contacts.

1. This is mandatory. Refer to "adjustments and measurements" for the location of these switches.
2. When replacing the fuse, confirm that it has the appropriate rating for these models.
3. When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.

8.5 Oven cavity aperatures

Never insert a wire or any other metal object through the lamp holes or other aperatures in the oven cavity, because such objects may work as an antenna and cause microwave leakage.

8.6 Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven are neither loose nor missing. Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).

CAUTION MICROWAVE ENERGY
Microwave energy is emitted from the magnetron attenna into the oven cavity via the wave guide. Do not opearate the microwave oven if the door is defective, the magnetron is not fitted correctly or the outer panel is removed.

IMPORTANT NOTICE
When the microwave oven is operating the following components carry a potential above 240VAC.

- Magnetron
- High voltage transformer (Located on inverter)
- High voltage diodes (Located on inverter)
- High voltage capacitors (Located on inverter)

Pay special attention in these areas.

When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm^3. After repair or replacing parts, it is very important to check if the magnetron and the door hinges are correctly fixed.

8.7 Sharp edges

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to touch and cause injury if not handled with care.

9 Parts Replacement Procedure

9.1 Magnetron

1. Discharge the high voltage capacitors on the inverter circuit.
2. Remove the 1 screw holding air guide A.
3. Remove the 2 screws holding the tie bar.
4. Remove the oven lamp and lead wire harness from air guide A.
5. Remove the air guide A.
6. Disconnect the 2 high voltage leads from the magnetron.
7. Remove the 4 screws holding the magnetron.

NOTE: After replacing the magnetron, tighten the mounting screws so there is no gap between the waveguide and the magnetron, this prevents microwave leakage.

Caution

When replacing the magnetron, ensure that the antenna gasket is in place.

Note

The magnetron used for this model is unique for the inverter power supply system. Only fit the magnetron listed in the service manual parts list.

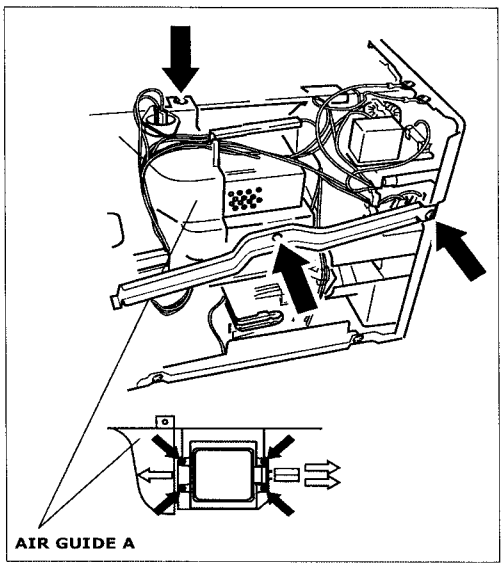


figure 6Removal of the magnetron

9.2 Inverter circuit

1. Discharge the high voltage capacitors.
2. Remove 2 screws holding the tie bar.
3. Unplug the H.V. Lead wires from the magnetron.
4. Remove the 1 screw holding the earth wire to the magnetron.
5. Remove the connector CN701 and CN702 from the inverter PCB.figure 8
6. Remove the 2 screws holding the inverter support-base to the oven chassis.
7. Carefully remove the inverter circuit board and support base from the oven.
8. Remove the air guide E.
9. Remove the 4 screws holding the inverter circuit board to the inverter support base. Figure 7

Caution

When replacing the inverter circuit

1. Check the grounding plate is in place.
2. Securely tighten the grounding plate screw through the side of the oven chassis.
3. Connect the 3 lead wire plugs into the correct sockets.
4. Ensure there is enough space between the heat sink and other components. Check that no lead wires are touching the aluminium heat sink.

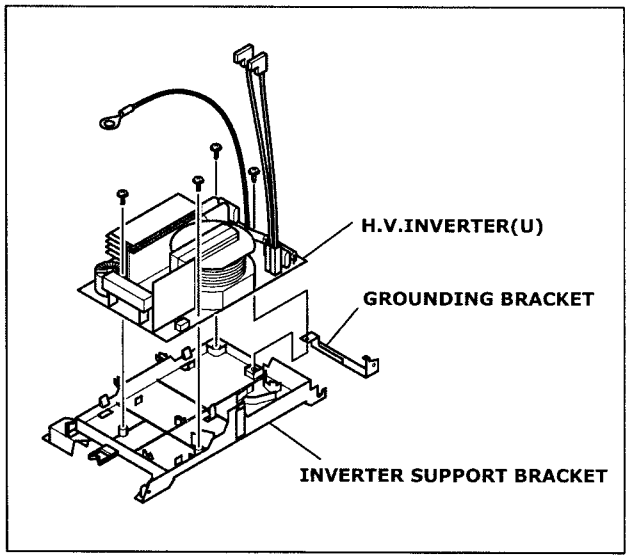


figure 7Removal of the inverter PCB.

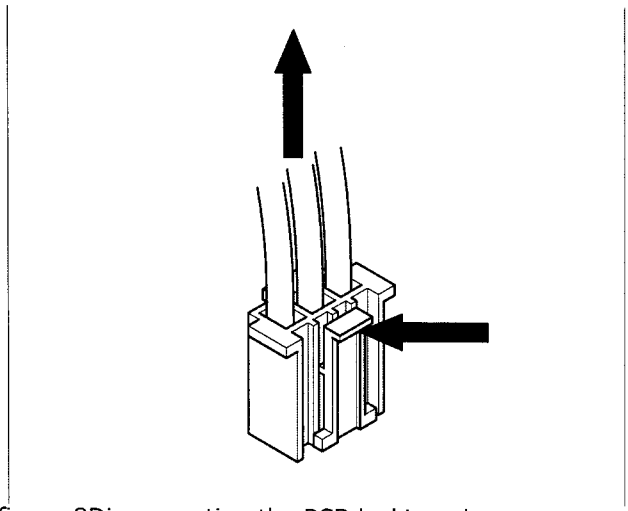


figure 8Disconnecting the PCB locking plug.

9.3 Digital Programmer Circuit (DPC) and membrane key board.

NOTE: Ground any static electric from your body before handling the digital programmer circuit (DPC).

1. Disconnect all lead wire plugs from the DPC.
2. Release the ribbon cable from the DPC.

3. Remove 2 screws holding the escutcheon base to the microwave oven chassis. To remove the escutcheon base; open the microwave oven door and slide the escutcheon base upward slightly.
4. Remove the 6 screws holding the DPC DU assembly.
5. Remove the door lever.
6. Remove the 7 screws holding the DPC AU assembly.

To remove escutcheon pad.

1. Remove the escutcheon bracket from the escutcheon base by freeing the 4 catch hooks.
2. Peel away the display window from the inside of the base.
3. Remove the membrane assembly by pushing from the inside of the base and then peeling it away from the outside surface.

NOTE:

1. When installing a new escutcheon key board, make sure that the surface of the escutcheon base is cleared, avoiding problems such as shorted contacts and uneven surfaces.
2. When replacing a stainless / aluminium escutcheon assembly, ensure that the stainless facia is earthed to the escutcheon back plate via the earth spring.

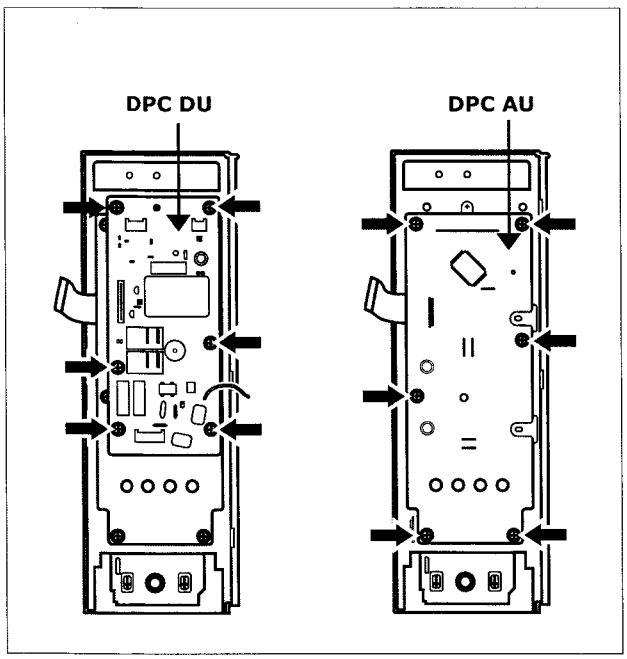


figure 9Removal of DPC AU and DPC DU

9.4 Low voltage transformer and/or power relays (RY1)

Note
Ground your body to discharge static charges before handling the DPC.

1. Carefully remove all solder from the terminal pins of the low voltage transformer / power relays using a 30W soldering iron and a solder sucker.
2. With all of the terminal pins cleaned and separated from the DPC contacts, remove the defective transformer/power relays and install the new components making sure that the terminal pins are inserted completely. Carefully re-solder all terminal contacts carefully.

Note

Do not use a soldering iron of more than 30 watts on DPC contacts

9.5 Fan Motor

1. Remove 2 screws to remove the tie bar.
2. Disconnect the 2 lead wires from the fan motor terminals.
3. Disconnect all lead wires from the noise filter.
4. Remove the noise filter.
5. Remove 2 screws to remove cover B.
6. Remove 2 screws holding the orifice assembly.
7. Remove 2 screws holding the fan motor assembly.
8. Detatch the orifice assembly and the fan motor assembly from the microwave oven.
9. Remove the fan blade from the fan motor by pulling outward.

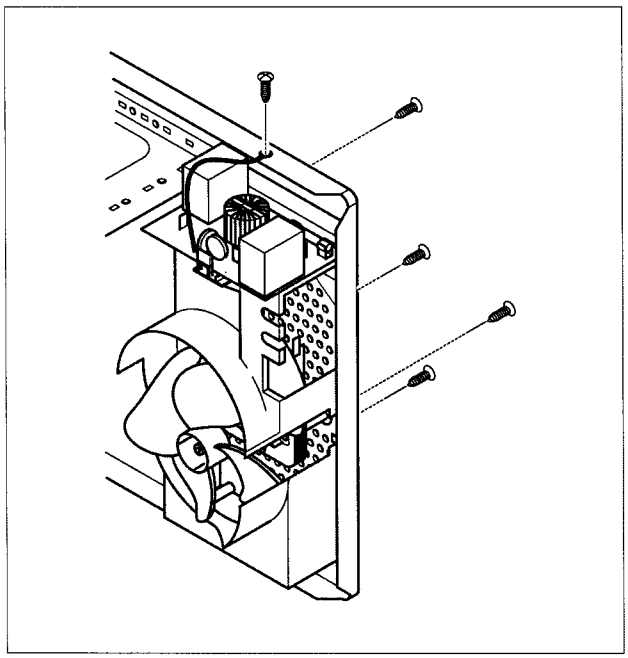


figure 10Removing the fan motor.

9.6 Door replacement

1. Carefully lever door C away from Door E using a flat blade screwdriver.
2. Remove 4 screws holding the door E to the door A assembly.
3. Remove the door screen B by unclipping the screen B from the door A catch hooks. Take care when removing the door screen B from door A, it is possible to damage the catch hooks on the door A .
4. Remove the door key and spring from the door E.

After replacing component parts of the door, follow the instructions below for proper installation and adjustment of the door, this is to prevent microwave leakage.

1. When mounting the door to the oven, adjust the door parallel to the bottom of the oven face plate by adjusting the upper hinge.
2. Adjust the door so there is no play between the inner door surface and the front of the microwave oven. If the door assembly is not mounted properly, microwave energy may leak from the clearance between the door and microwave oven.
3. Perform the microwave leakage test.

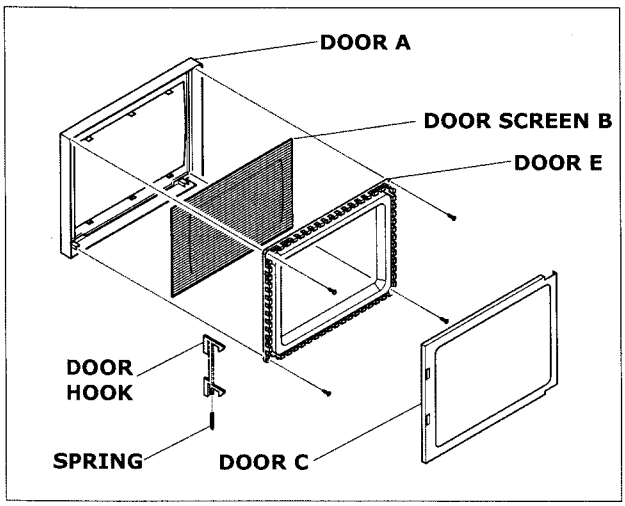


figure 11Disassembly of the door.

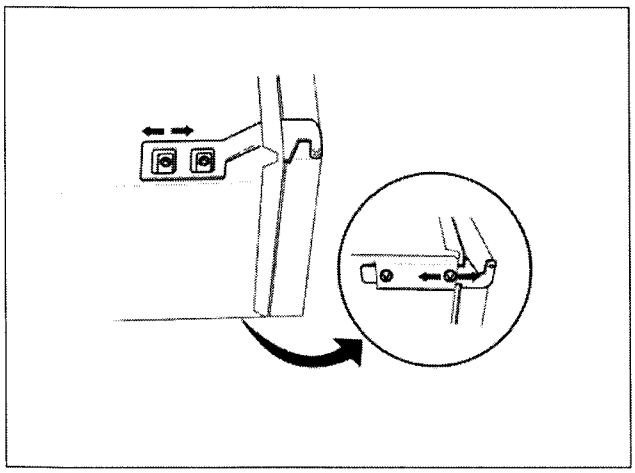


figure 12Adjusting the door hinge.

9.7 Turntable Motor

1. Remove the motor cover by breaking it off at the 8 spots indicated by the arrows.
2. Disconnect the two lead wires connected to the turntable motor.
3. Remove the 2 screws holding the turntable motor.

Note: After breaking off the motor cover, make sure no sharp edges are exposed by trimming off the edges or bending them inside.
Note: To secure the motor cover use a 4 x 6 screw.

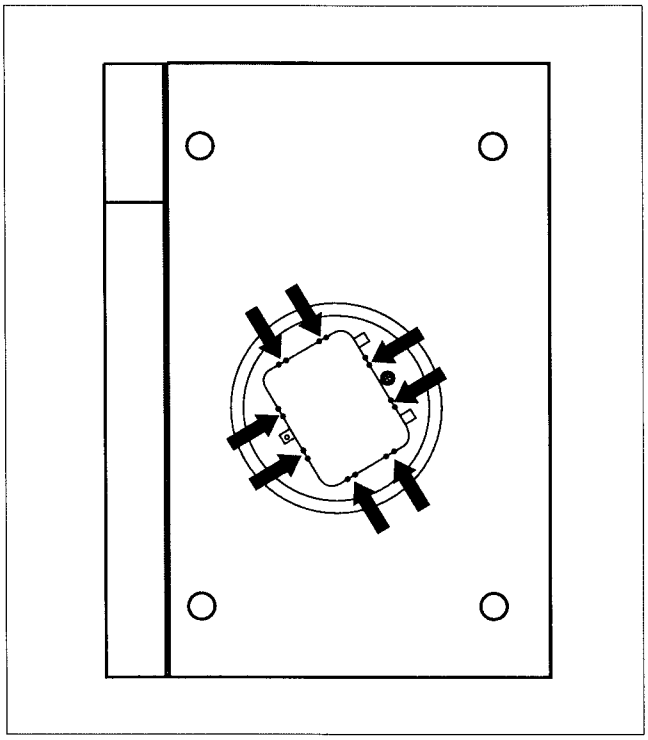


figure 13Removing the turntable motor cover.

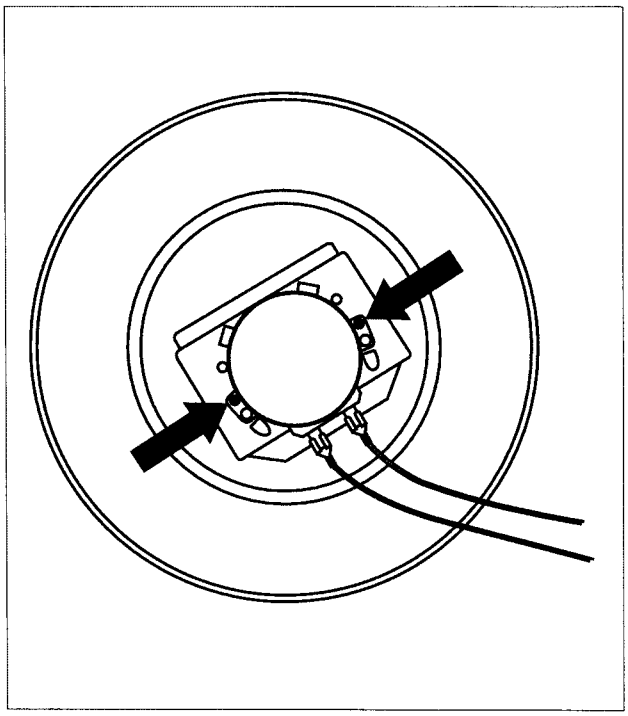


figure 14Removing the two screws fixing the turntable motor.

10 Component Test Procedure

Caution

- The inverter circuit operates at high voltages.
- Never attempt to measure the high voltage on the inverter circuit.
- Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

10.1 Primary latch switch, secondary latch switch and power relay B interlocks.

1. Unplug the lead wires from the contact terminals of RY1, check the continuity across these terminals using an ohm meter set to the lowest resistance scale.
2. Unplug the lead wires to the primary latch switch and secondary latch switch.
3. Test the continuity of each switch with an ohm meter set to the lowest resistance scale. The test must be completed with the microwave oven door open and closed.
4. Normal continuity readings should be as follows.

	Door Open	Door Closed
Primary Latch Switch	∞ Ω (Open)	0 Ω (Close)
Secondary Latch switch	∞ Ω(Open)	0 Ω (Close)
Power relay B	∞ Ω(Open)	∞ Ω (Close)

10.2 Short switch and monitor circuit

1. Unplug the lead wires from the high volatge inverter primary terminals.
2. Connect the test probes of the ohm meter to these leads.
3. Test the continuity of the short switch with the door open and the door closed using a ohm meter set to the lowest resistance scale.

	Door Open	Door Closed
Monitor switch	0 Ω	∞ Ω

10.3 Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron:

1. Dissconnect the high voltage lead wires from the magnetron input terminals.
2. Check the continuity across the magnetron filament terminals, a good magnetron indicates a resistance of 1 ohm or less.
3. Check the continuity between each filament terminal and the magnetron case, a good magnetron indicates infinite ∞ resistance.

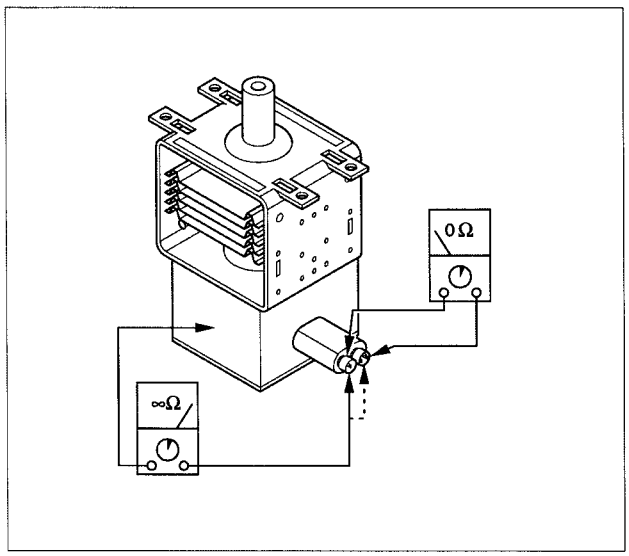


figure 15Testing the magnetron

10.4 Push button keyboard

Check the continuity between the switch terminals on the DPC AU, by tapping an appropriate pad on the keyboard and measuring the resistance across the corresponding tracks on the ribbon cable.

10.5 Inverter power supply

Caution

DO NOT try to repair this inverter power supply. Replace this inverter power supply as a unit.

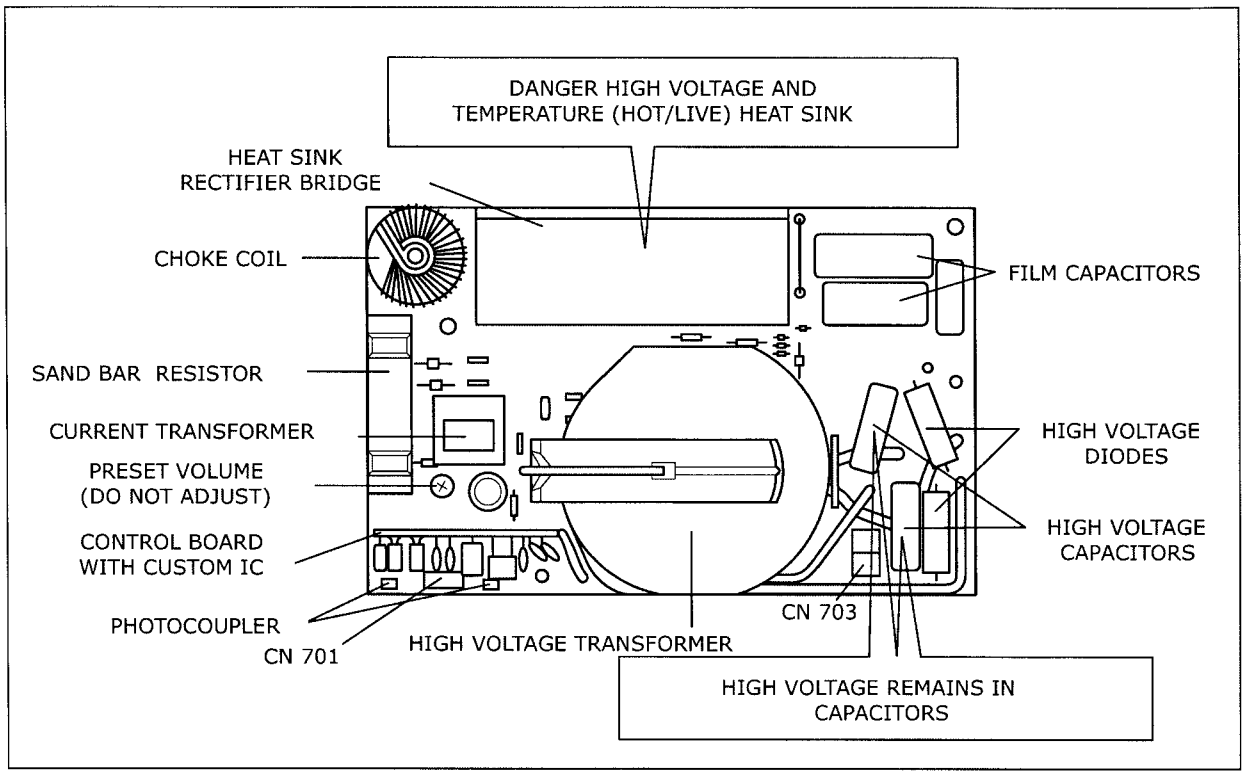


figure 16Inverter circuit board layout

10.6 Inverter power supply unit

Warning

Do not attempt to make any measurements in the high voltage circuit of the inverter or magnetron.

See troubleshooting of the inverter circuit and magnetron on to determine if the inverter power supply is still functioning.

11 Measurements and Adjustments

Warning

- Only replace parts with parts from the original manufacturer.
- When the 10 amp fuse is blown due to the operation of the short switch, you must replace the primary latch switch and short switch. Then follow the installation procedures below.
- Interlock switch replacement - When replacing faulty switches, check the mounting tabs on the door-hook assembly are not bent, broken or deficient in their ability to hold the switches.
- Refer to the schematic and wiring diagram to ensure the plug connectors on the wire harness are connected to correct switches.

11.1 Installation of primary latch switch, secondary latch switch and short switch.

1. When mounting the primary latch-switch, secondary latch-switch and short latch-switch to the door hook assembly. Follow the instructions in figure 17.
2. NOTE: No specific adjustment during the insulation of each switch into the door hook is necessary.
3. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrow figure 17. Ensuring the door does not have any play in it. Check for play by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
4. Reconnect the short switch, primary switch and secondary latch switches and check the continuity of the monitor circuit and latch switches by following the component test procedures on .

11.2 Measurement of microwave output

The output power of the magnetron can be determined by performing the IEC standard test. However, due to the complexity of the IEC test procedures, it is recommended you test the magnetron using the simple method outlined below.

Necessary equipment:

- 1 litre beaker.
- Glass thermometer.
- Wrist watch or stop watch.

NOTE: Check the line voltage under load. Low line voltage lowers the magnetron output. Take the temperature readings and heating time as accurate as possible.

1. Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the waters temperature (Record as T1).
2. Place the beaker on the center of the glass cook plate.
3. Operate the Microwave for 1 Minute on FULL power.
4. Stir the water again and read the temperature of the water. (Record as T2).
5. The normal temperature rise at the high power position for each model is shown in the table figure 18

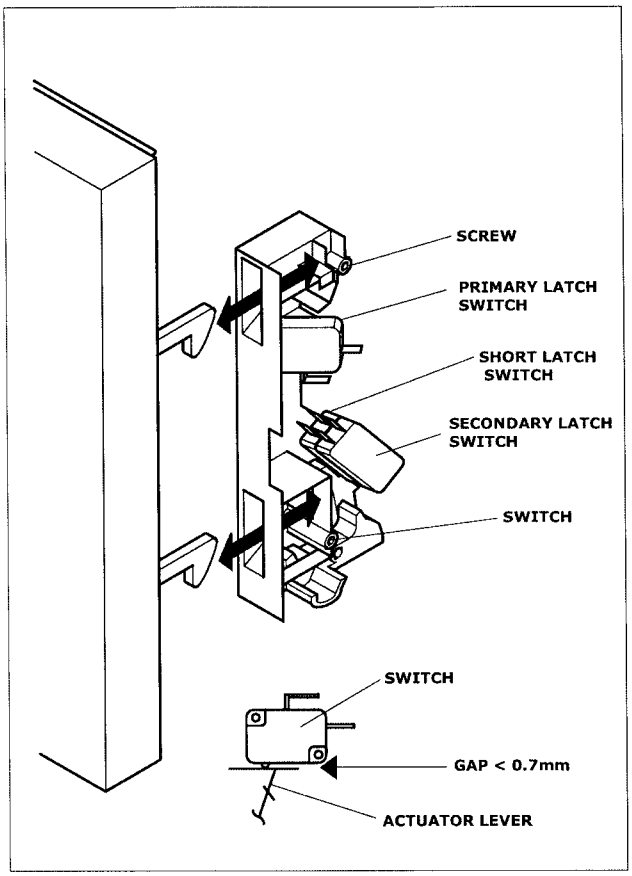


figure 17Adjustment of latch switches

RATED OUTPUT	TEMPERATURE RISE
1000W	8°C (Degrees centigrade)

figure 18Temperature rise

12 Troubleshooting Guide

Caution

1. Do not try to repair the H.V. Inverter power supply. Replace the inverter circuit board as a complete unit.
2. Do not adjust the preset volume on the Inverter. It is very dangerous to repair or adjust without special test equiptment, the inverter handles very high voltage and current.
3. Do not attempt to measure the voltages in the microwave oven high voltage circuit.
4. Always discharge the high voltage capacitors on the inverter circuit board before troubleshooting.
5. When checking the continuity of the components on the H.V. inverter circuit, unsolder and remove one leg of the component from circuit board. Checking the continuity of these components when both legs are soldered into the board may result in a false reading or damage to your meter.
6. When disconnecting a plastic connector from a terminal, you must hold the plastic connector and not the lead wire, otherwise the lead wire may become open circuit.
7. Do not touch components on the digital programmer circuit, this circuit is sensitive to static electricity.
8. When working with the digital programmer board ensure your body is connected to ground to discharge any static charge.
9. 240 VAC is present on the digital programmer circuit. (Terminals of the power relays and the primary circuit of the low voltage transformer). When troubleshooting, be cautious of possible electric shock.

To ensure the complaint is not due to operator error, check the operation of the oven by following the procedures explained in the operating instruction book.

12.1 Troubleshooting (no operation)

	Symptom	Cause	Correction
1.	Oven is dead. Fuse is OK No display and no operation at all.	1. Open or loose lead wire harness. 2. Open low voltage transformer. 3. Defective DPC AU or DPC DU	
2.	Oven does not accept key input (Program).	1. Key input is not in sequence. 2. Shorted push button on DPC AU 3. Defective DPC AU.	Refer to operation procedure. Refer to DPC troubleshooting
3.	Oven lamp and turntable motor turn on when the microwave oven is plugged in with the door closed.	1. Maladjusted or loose wiring of secondary latch switch. 2. Defective secondary latch switch.	Adjust door and latch switches.
4.	Timer starts to countdown but no microwave oscillation.	1. Maladjusted latch switches. 2. Open or loose connection of high voltage circuit, including the magnetron filament circuit. NOTE: A large contact resistance lowers the magnetron filament voltage reducing the magnetron output or causing intermittent operation. 3. Defective high voltage component Inverter circuit or Magnetron. 4. Open or loose wiring of power relay (RY1) 5. Defective primary latch switch. 6. Defective power relay RY1 or DPC AU or DPC DU.	Adjust door and latch switches. Check high voltage components according to the component test procedure.

12.2 Troubleshooting (fuse blown)

	Symptom	Cause	Correction
1.	No display and no operation at all. 10A Fuse is Blown	1. Shorted lead wire harness. 2. Defective primary latch switch (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter power supply. (Refer to inverter circuit test procedure on page)	Check adjustment of the Door, Primary, secondary and short latch switches.
		NOTE 1: All of these switches must be replaced at the same time. (Refer to adjustment instructions page) Check continuity of power relay RY1 Replacce this relay if it is short circuit.	

12.3 Troubleshooting (other problems)

	Symptom	Cause	Correction
1.	Microwave output is low. Oven takes a long time to cook food.	1. Decrease in power source voltage. 2. Open or loose wiring of magnetron filament circuit causing intermittent oscillation. 3. Ageing of magnetron	Consult electrician. Refer to output test procedures. Change magnetron
2.	Loud Buzzing noise can be heard.	1. Loose fan or fan motor	
3.	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor. 2. Defective turntable motor	
4.	Oven stops operation during cooking cycle.	1. Open or loose wiring of primary and secondary latch switch.	Adjust door and latch switches.
5.	Oven returns to "plug in" state 9 seconds after the start pad is pressed in sensor cooking mode.	1. Open steam sensor circuit. 2. Defective steam sensor.	

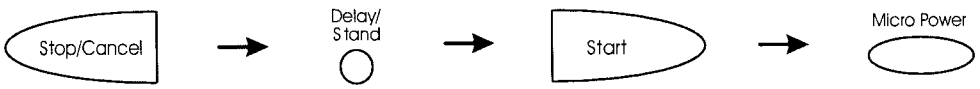
12.4 Troubleshooting the inverter by input voltage

Troubleshooting the Inverter circuit and magnetron

Microwave oven shuts down between 15 - 33 seconds.

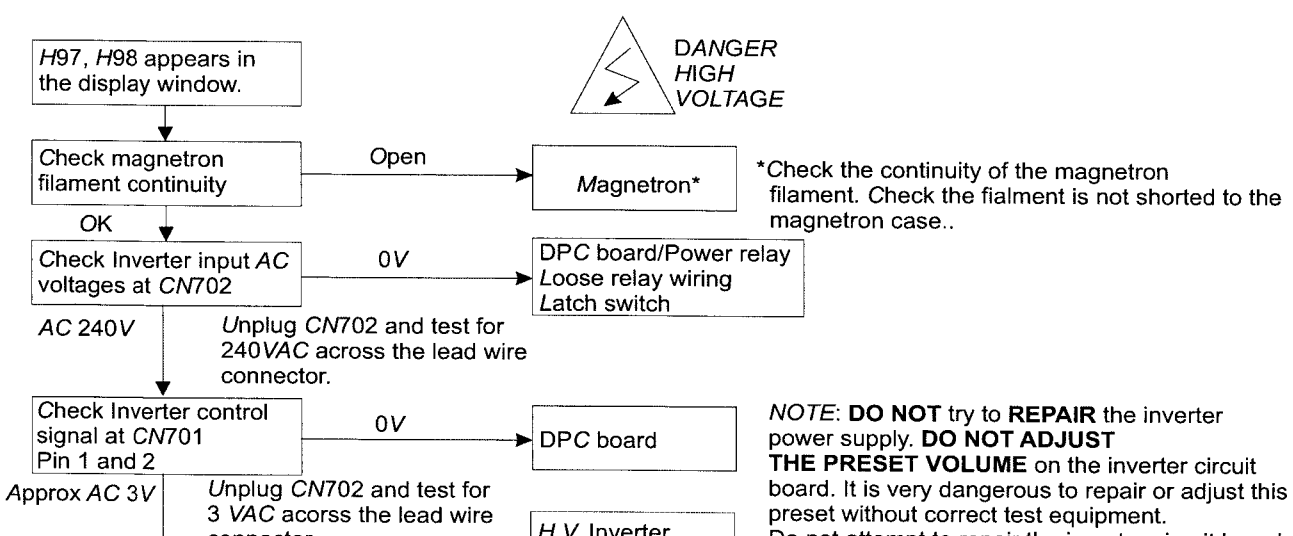
If the microwave oven shuts down after a short period of time while operating in micropower mode, conduct the following test.

The microwave oven must be set in self test mode to activate the self diagnostic failure code system.



When oven is set in test mode, place water load (1Ltr) in the oven, set micropower to high and time for 1 minute, press start.

H97, H98 appears in the display window for a short time after start key is pressed and there is no microwave oscillation.


H97, H98 appears in the display window.
DANGER
HIGH
VOLTAGE
Check magnetron filament continuity
Open
Magnetron*
*Check the continuity of the magnetron filament. Check the fialment is not shorted to the magnetron case..
OK
Check Inverter input AC voltages at CN702
0V
DPC board/Power relay
Loose relay wiring
Latch switch
AC 240V
Unplug CN702 and test for 240VAC across the lead wire connector.
Check Inverter control signal at CN701 Pin 1 and 2
0V
DPC board
Approx AC 3V
Unplug CN702 and test for 3 VAC acorss the lead wire connector.
H.V. Inverter
NOTE:
NOTE: DO NOT try to REPAIR the inverter power supply. DO NOT ADJUST THE PRESET VOLUME on the inverter circuit board. It is very dangerous to repair or adjust this preset without correct test equipment.
Do not attempt to repair the inverter circuit board, replace the inverter circuit board with a new unit.

12.5 Troubleshooting inverter by microwave oven input current

This is an alternative way to test the inverter circuit by monitoring the input current to the microwave oven.

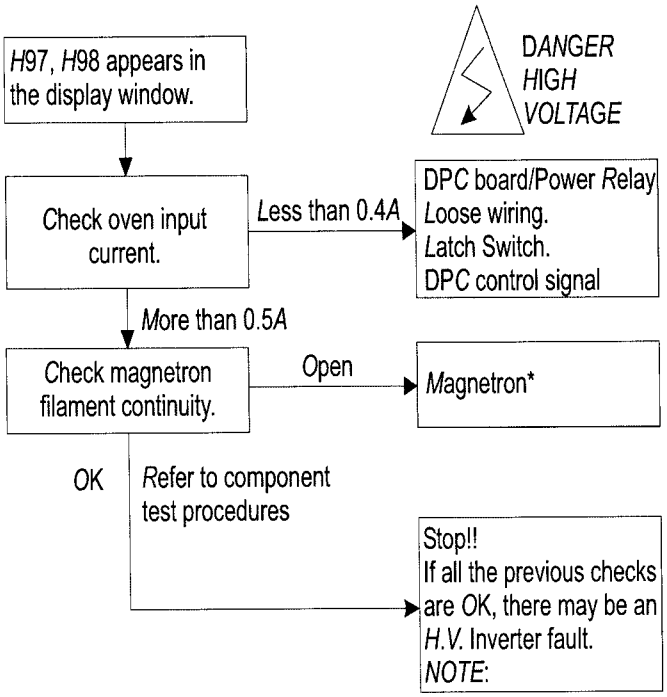
The microwave oven shuts down between 15 and 33 seconds

If the microwave oven shuts down after a short period of time while operating in micropower mode, conduct the following test.

The microwave oven must be set in self test mode to activate the self diagnostic failure code system.

When the micorwave oven is set in test mode, place a water load (1Ltr) in the oven, set micropower to high and time to 1 minute, press start.

A short time after the start pad is pressed, H97, H98 appears in the display window and the magnetron does not oscillate.



*Check the continuity of the magnetron filament. Check the filament is not shorted to the magnetron case.

NOTE: DO *NOT* try to *REPAIR* the inverter power supply. DO *NOT ADJUST THE PRESET VOLUME* on the inverter circuit board. It is very dangerous to repair or adjust this preset without correct test equipment.
Do not attempt to repair the inverter circuit board, replace the inverter circuit board with a new unit.

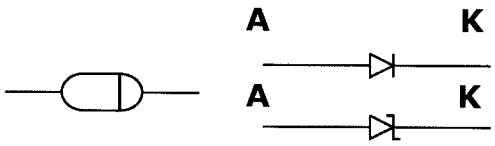
12.6 Digital programmer circuit troubleshooting

SYMPTOM	STEP	CHECK	RESULT	CORRECTION
No display when the microwave oven is first plugged in. Microwave oven is dead	1	Fuse pattern on DPC	Normal	STEP 2
			Open (Note1)	Shorted circuit ZNR-LVT-Lamp
	2	IC10 pin 9 12V line	Abnormal 0V	IC10
			Normal 12V	Step 3
	3	IC-1 pin 73 (Emitter of Q10)	Abnormal	ZB10 Q10 Ribbon cable
			Normal 5V	Step 4
	4	IC-1 pin 27 (pin 15 of IC220)	Abnormal	IC-220
			Normal	IC1 CX1
NOTE The procedure for repairing the fuse pattern on the DPC is as follows: **1. Fuse pattern PF2 open circuit** a) Remove the jumper wire PF2 b) Move the jumper wire PF3 into the postion of PF2 and solder inplace. Replace the DPC if both the fuse pattern PF2 and PF3 are open circuit. Note: After repairing the fuse pattern on the DPC, check the varistor for any burns and measure the winding resistance of the low-voltage transformer primary coil.				
No key input	1	Push button switch	Abnormal	Push button switch
			Normal	IC-1
No beep sound	1	IC1 pin 12	Abnormal	IC-1
			Normal	IC-220 BZ310
Power relay (RY2) does not operate	1	IC-1 pin 23 during operation	Abnormal	
			Normal 5V	
	2	Create a short circuit between pin 6 and pin 16 of IC-2	RY2 does not turn on	RY2
			RY2 turns on	IC-220
No microwave oscillation	1	IC-1 pin 18 and 16 during high power operation	Abnormal	IC-1
			Normal 18 - 5V 16 - 5V	Step 2
	2	Q221 transistor		

Dark or unclear display	1	Replace display	Abnormal	Display
			Normal	IC-1
Missing segments in display		Replace IC-1	Abnormal	IC-1
			Normal	Display
Microwave oven shuts down between 15 - 33 seconds. Set the microwave oven to test mode (See page) Set to high power 1 minute. H97 or H98 appears in the display and the microwave oven stops working Program for 1 minute and perfrom the following test	1	Unplug CN702 connector and measure the voltage between the terminlas	Abnormal	1. Latch switch 2. DPC/Power relay
			Normal	Step 2
	2	Unplug CN703 connector and measure the voltage at Pin 1	Abnormal	DPC
			Normal	1. Magnetron 2. Inverter circuit

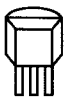
12.7 Checking the semiconductors using a resistance meter

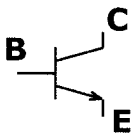
Diode



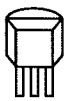
	Forward	Reverse
A - K	Low Ω	∞

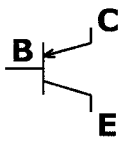
Transistor





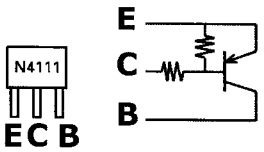
	Forward	Reverse
B - E	Low Ω	∞
B - C	Low Ω	∞
C - E	∞	∞





	Forward	Reverse
E - B	Low Ω	∞
C - B	Low Ω	∞
C - E	∞	∞

Digital transistor



	Forward	Reverse
E - B	10 -30 kΩ	10 -30 kΩ
C - B	50 -90 kΩ	∞
C - E	40 -60 kΩ	∞

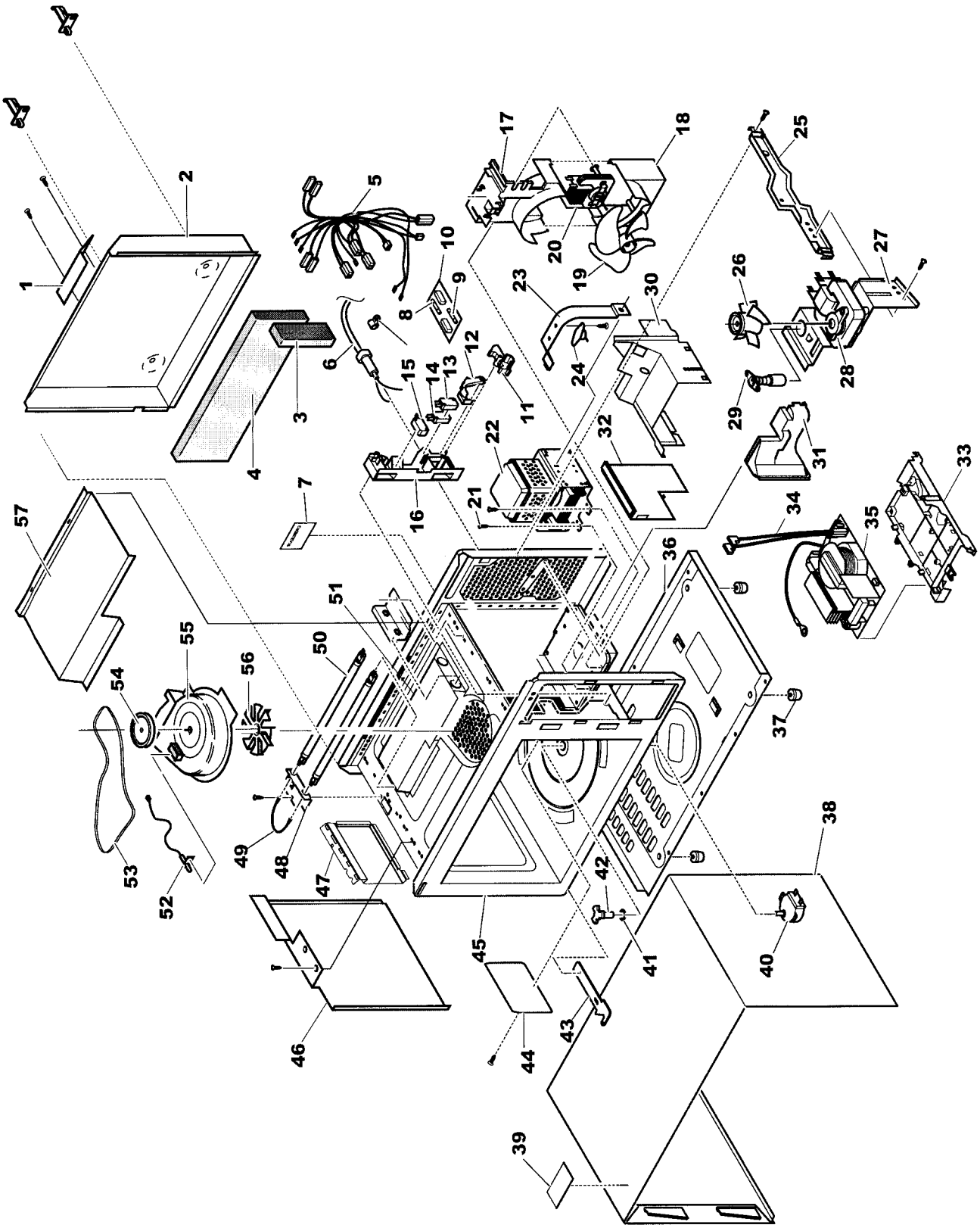
13 Parts List

- When ordering parts quote the part number, do not use the description of the part.
- Components identified by the following symbol (!) have special safety characteristics. Only replace these parts with parts supplied by the original manufacturer.

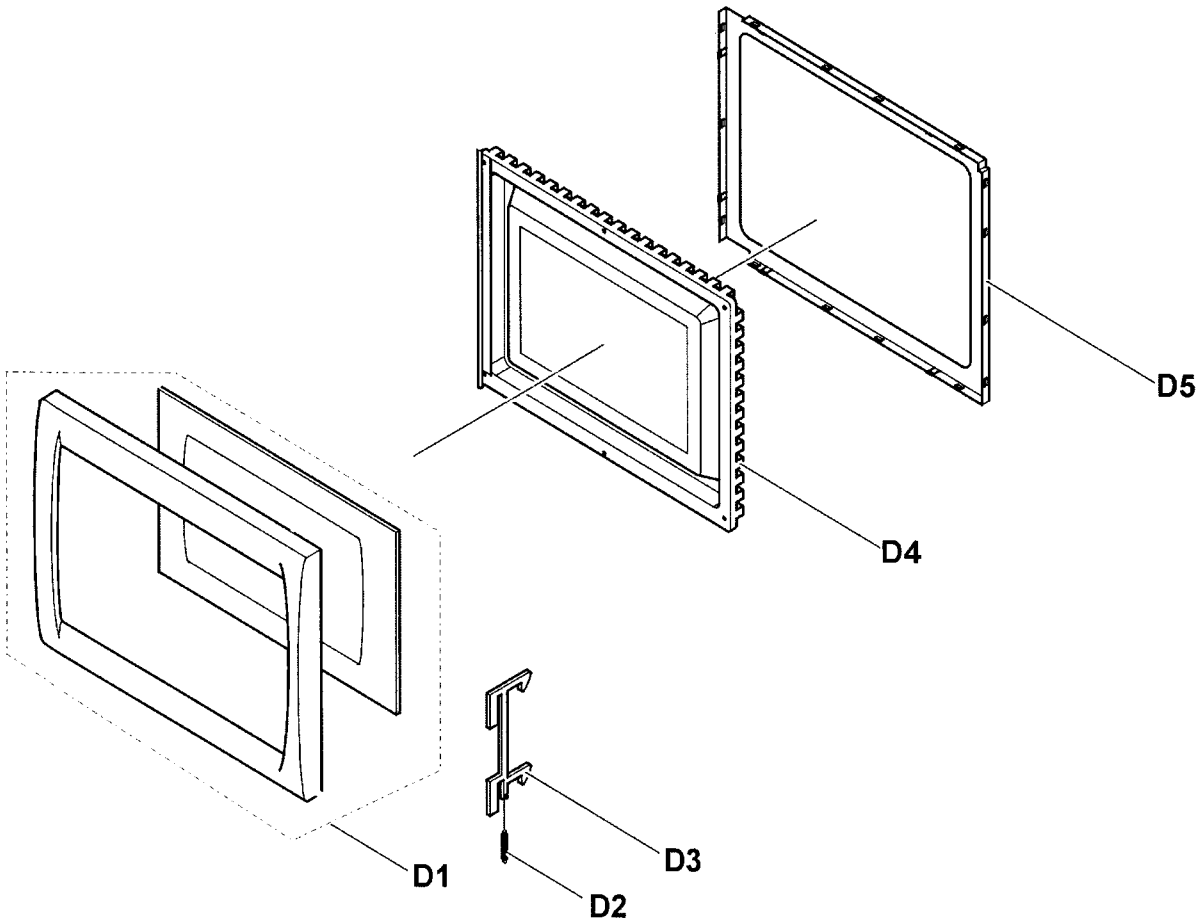
Ref. No.		Part No.	Part Description		Comments
1		E10356R20BP	Back Cover Bracket	1	
2		E10586R20BP	Back Cover	1	
3		E22586R20BP	Adiabatic Material A	1	
4		E22596R20BP	Adiabatic Material B	1	
5	(!)	E030A6R20BP	Leadwire Harness	1	
6	(!)	E901C5870GP	Power Cord	1	
7		E00069000EP	Warning Label	1	
8	(!)	E65797550GP	10A Ceramic Fuse	1	
9	(!)	ANE6230P10GN	16A Ceramic Fuse	1	
10	(!)	E607X4N30BP	Noise Filter	1	
11		E31374830AP	Hook Spacer B	1	
12		E31384830AP	Hook Spacer C	1	
13	(!)	E61425180AP	Secodary Latch Switch	1	
14	(!)	E61785180AP	Short Switch	1	
15	(!)	AEE6142-1450	Primary Latch Switch	1	
16	(!)	E30208000BP	Door Hook Unit	1	
17		E41444N30BP	Upper Orifice	1	
18		E42094N30BP	Lower Orifice	1	
19		E4008-1640	Fan Blade	1	
20	(!)	E400A4760JP	Fan Motor	1	
21		EXTT4+11FN	Screw	2	For Magnetron
22	(!)	2M236-M42G	Magnetron	1	
23		E66264L00GS	Thermal Cutout Bracket	1	
24	(!)	E61454V20BP	Thermal Cutout	1	
25		E20996R20BP	Reinforcement Bracket	1	
26		E40086R20BP	Pulley B	1	
27		E41806R20BP	Motor Bracket	1	
28	(!)	E490S6R20BP	Convection Fan Motor	1	
29	(!)	E610T5D00BP	Oven Lamp	1	
30		E40474N70GS	Air Guide E	1	
31		E40256R20BP	Air Guide A	1	
32		E22364V10BP	Right Hand Heater Panel	1	
33		E65854V00BP	Inverter Support Bracket	1	
34	(!)	E030E4N30BP	H V Leadwire	1	
35	(!)	E606Y4V00BP	Inverter	1	Exchangeable
36		E1001R20BP	Base Plate	1	
37		ANE1008-5S1	Rubber Foot	1	
38		E110D6R20NBP	Outer Panel	1	
39		E01505870GH	Outer Panel Warning Label	1	
40	(!)	E63268960JP0	Turntable Mototr	1	
41		AEE2177-F80	Turntable Bracket	1	
42		E610T5D00BP	Pulley Shaft	1	
43		E30074L00GP	Lower Door Hinge	1	
44		E20554L00GS	Cover A	1	
45	(!)	E200A6R20BP	Oven Cavity	1	
46		E22376R20BP	Left Hand Heater Panel	1	
47		E41456R20BP	Left Air Guide	1	
48		E64604N70BP	Heater Bracket	2	

Ref. No.		Part No.	Part Description		Comments
49		E03594N30GP	Leadwire Grill Link	1	
50	(!)	E630G4N30GP	Quartz Heater	2	
51		E21446R20BP	Heater Hood	1	
52		A605A-1960	Thermistor U	1	
53	(!)	E40606660QP	Pulley Belt	1	
54		E41326R20BP	Pulley A	1	
55		E400H6R20BP	Fan Case Unit	1	
56		E22396R20BP	Convection Fan	1	
57		E22786R20BP	Upper Heater Panel	1	

14 Exploded View



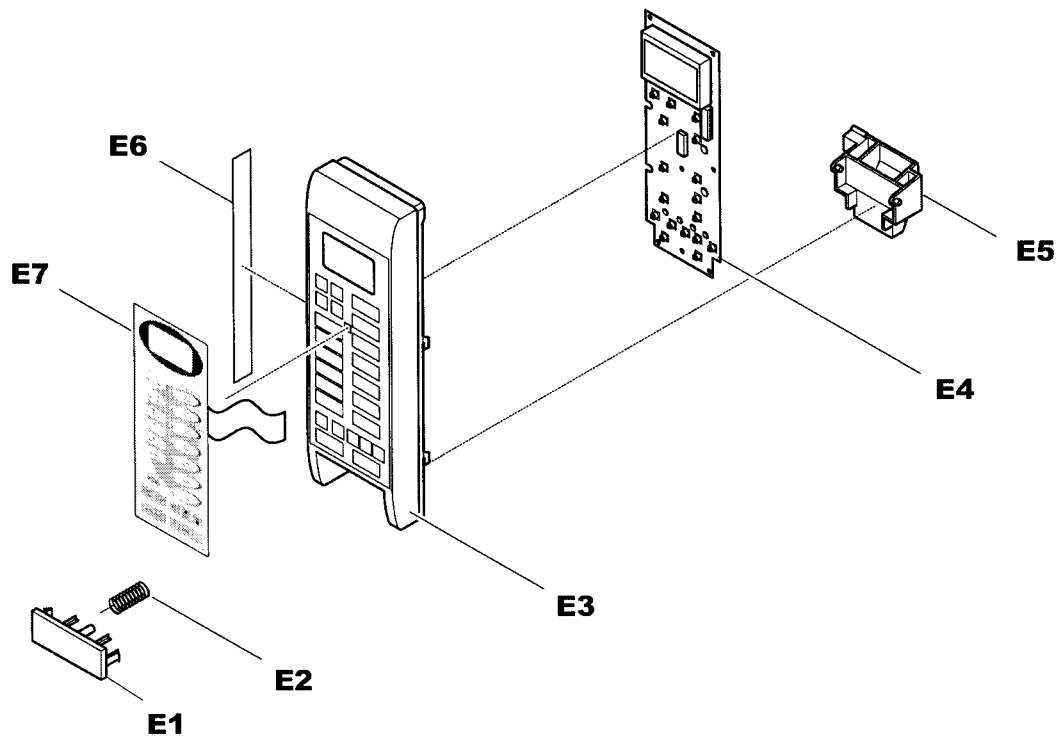
15 Door Assembly



Ref no		Part Number	Part name & description	Qty	Remarks
D1		E302A6R20NGP	DOOR A ASSEMBLY	1	
D2		E30214000AP	DOOR KEY SPRING	1	
D3		E30184L00GS	DOOR KEY	1	
D4	(!)	E302K6R00ABP	DOOR E ASSEMBLY	1	
D5		E30854V00BP	DOOR C	1	

NOTE: When ordering any Door component also order door C as this part may become damaged during disassembly.

16 Escutcheon Base

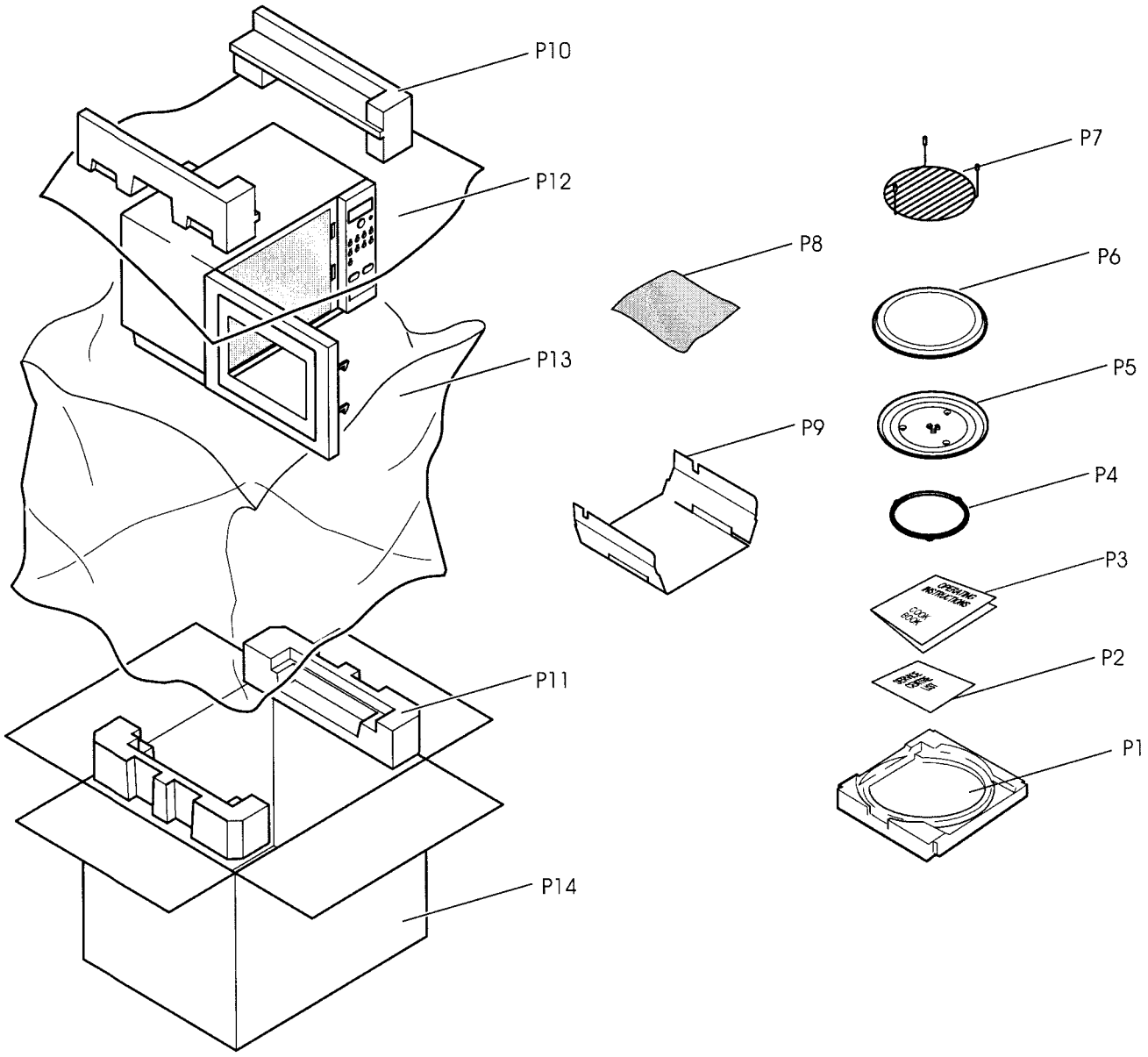


Ref. No.		Part No.	Part Name & Description	Qty	Remarks
E1		E80726R20NBP	Door Opening Button	1	
E2		E80378A0AG	Door Opening Spring	1	
E3		E80346R20NBP	Escutcheon Base	1	
E4	(!)	E603L6R20GP	PCB AU	1	
E5		E82566R20BP	Door Opening Lever	1	
E6	(!)	E00076R20NGP	Nameplate	1	
E7		E83376R20NGP	Escutcheon Sheet	1	

NOTE: When replacing the escutcheon base, you must transfer the serial number of the microwave oven to the new base. Therefore, when ordering an escutcheon base, also order the blank name plate for your model. Write the model number and serial number on this nameplate and fix the nameplate to the new escutcheon base.

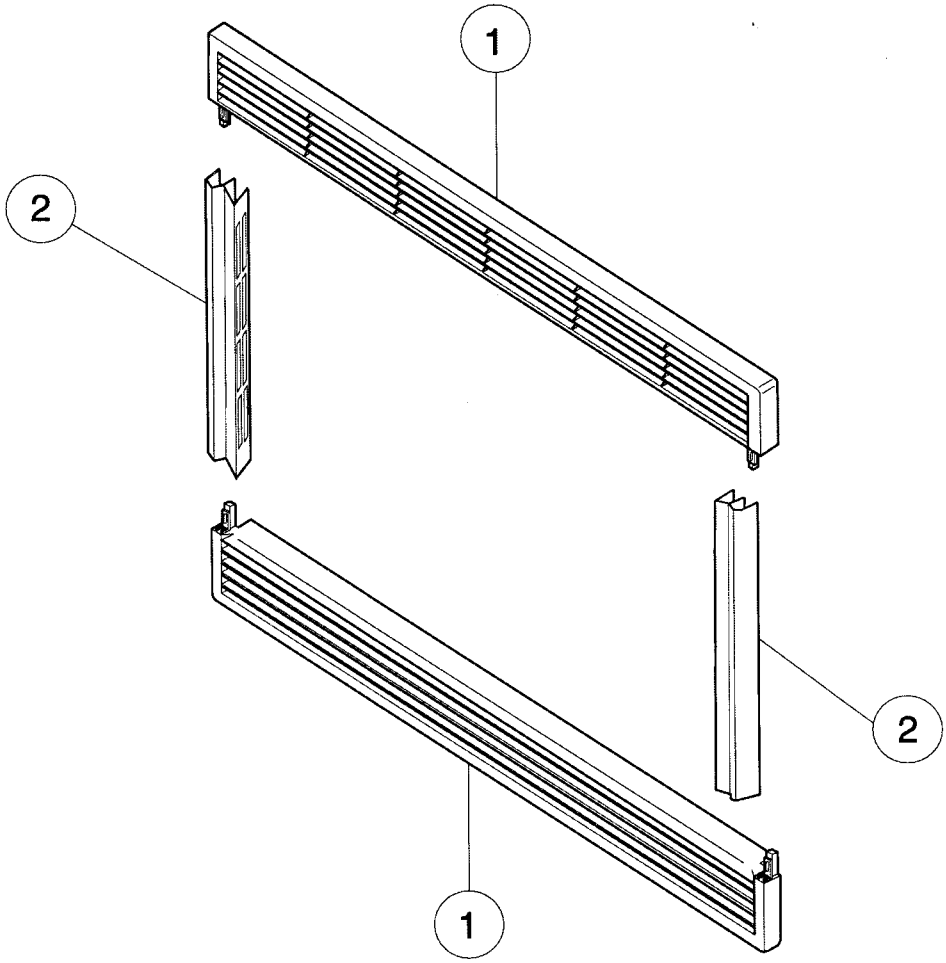
.

17 Packing and Accessories



Ref. No.		Part No.	Part Name & Description	Qty	Remarks
P1		E01134N30BP	Tray Styrol	1	
P2		E01695750BP	Service Centre List	1	
P3		E00036R20GP	Operating Instructions / Cook Book	1	
P4		E290D6R20BP	Roller Ring	1	
P5		E06014N30BP	Glass Tray	1	
P6		E06015020VP	Enamel Tray	1	
P7		E060V6R20BP	Wire Rack	1	
P8		E02146700BP	Foam Sheet	1	
P9		E01084N30GP	Tray Packing	1	
P10		E01044N30BP	Upper Filler	1	
P11		E01054N30BP	Lower Filler	1	
P12		E01926430GP	Protector Sheet	1	
P13		E01104N70GS	Vinyl Bag	1	
P14		E01026R20BP	Carton Boxt	1	

18 Trim Kit Accessories



Trim Model No.	Top and Bottom Strip ref 1	Qty	Left and Right Strip ref 2	Qty	Remarks
NN-TKA70MB	E1603A510NBP	2	E1601A510NBP	2	
	E000QA820BP				Installation Guide

19 Digital Programmer Circuit